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ABSTRACT

Seven criteria for selecting and describing the standardization sample of the Metropolitan Achievement Test (MAT), 1978 edition are discussed. Four major variables were used to describe the sample: socioeconomic status; school district enrollment; public vs. nonpublic; and geographic region. Both forms and all grade levels of the Survey Battery and the Reading, Mathematics and Language Instructional Tests were standardized in October 1977 and April May 1978. Tables describe: scores on the Otis-Lennon School Ability Test, administered with the fall MAT; percentage of special students; and variables of the sample relative to national norms. The 218 school districts who participated are listed. (RL)

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Metropolitan Achievement Tests

1978 Edition

Special Report

NUMBER 8

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GUIDELINES FOR STANDARDIZATION SAMPLING

The standardization program for a major new achievement series such as the Metropolitan Achievement Tests, 1978 Edition, is a sizable undertaking, requiring extensive research, careful decision-making, and detailed documentation. Knowledge of the standardization process is important for test users, especially for those employing the national norms for the test. This document reviews the guidelines developed by the Metropolitan authors and research staff for selecting and describing the standardization samples. The standardization groups for the 1978 edition of the Metropolitan consisted of not one, but four independent samples: one for the Survey battery and one for each of the Reading, Mathematics, and Language Instructional batteries. While the guidelines presented in the following pages were employed in the selection and description of each sample, with few exceptions, different school systems participated in the standardization process for the four different batteries.

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I. AIM

The general aim of the standardization program was twofold. First, it was intended to yield a set of norms based on a sample of pupils so selected that one could assert with reasonable confidence that those norms reflected performance of the nation's school population. Second, the program was designed to yield sufficient information, at each grade level and time of year, regarding the standardization group so that the adequacy of the sample could easily be evaluated. The first aim, then, relates to the selection of the standardization sample, while the second aim relates to the description of that sample.

In the course of presenting the various criteria, three terms are used recurrently. (1) The first term, "sample," may have one of two meanings. It may refer to the pupils in the standardization program or it may refer to the school systems in the program. The context clarifies which of the meanings is intended by use of the term. (2) The second term used recurrently is "test." This is a composite, involving different batteries, levels, tests, and forms. Unless some distinction is intended, the term "tests" refers to any part or all of this composite. (3) The third term to be defined is "index variable." An index variable is any of the numerous characteristics of the sample (or population) used in defining and describing the sample (or population). Index variables include characteristics of communities (e.g., size of school population or socioeconomic status), characteristics of school systems (e.g., starting teachers' salaries or amount of time spent teaching reading), and characteristics of pupils (e.g., chronological age or IQ scores).

II. CRITERIA FOR SELECTION AND DESCRIPTION

As part of the guidelines for sampling, several criteria for selecting and describing the standardization sample were developed. These criteria are introduced here as general principles; their application and interaction are discussed in the next section. The listing below is not necessarily in order of importance. The major criteria used for selection and description of the Metropolitan sample are as follows:

1. Criterion of Stability

A primary concern in the selection of the sample must be the stability of the resulting norms. Two partially independent aspects of stability, corresponding to the two basic types of norms to be provided, must be taken into account. First, the relative stability of various points across the sample distribution must be assured. These points serve as the basis for norms derived from within-grade distributions: percentile ranks and stanines. Second, the stability of measures of central tendency for successive grade or age groups is important, as they are the basis for the development of grade equivalents and scaled scores.

2. Criterion of Consistency

A considerable amount of test use is comparative in nature. Grade 2 results are compared with Grade 3 results, reading results are compared with mathematics results, etc. It is important, therefore, that the sample yield consistent results across grades and tests. In fact, for many uses of test results, the consistency of the norms is more important than the accuracy of the norms as exact reflections of theoretical national average performance. The norm sample, then, should be such that it yields data amenable to this comparative use of tests.

3. Criterion of Relevance

In selecting and describing the standardization sample, greatest weight should be given to those index variables that show the highest correlation with test performance. This criterion derives directly from the mathematics of sampling theory. There is a known, direct relationship between the increase in sampling efficiency and the correlation of test performance with index variables used for stratifying or describing the sample. Stratifying on index variables unrelated to test performance adds nothing to the adequacy of sampling. The relevance of index variables (i.e., their correlation with test performance) can be determined by examining previous research on these matters (see Section III below).

4. Criterion of Independence

Insofar as possible, the various index variables used for selecting and describing the sample should be independent. "Independent" is used here in a statistical sense, meaning uncorrelated with one another. The rationale for this criterion is also based directly on mathematical considerations. The

combination of Criteria 3 and 4 brings the results of multiple regression theory into consideration in sample selection and description. Criterion 4 suggests, for example, that if "percent of adults who have completed high school" is employed as an index variable, little is gained by also employing "median years schooling for adults," because these two variables are known to be very highly correlated. Of course, many index variables will be moderately correlated with one another. Thus, application of this criterion is a matter of degree.

5. Criterion of Successive Refinement

The selection and, especially, the description of the sample should proceed in a series of steps, with each step leading to more adequate results. The entire operation of selecting and describing a standardization sample is so large, extends over such a long period of time, potentially involves so many variables, and bears such important consequences that it would be inaccurate to assume that the sample is selected and described all in one process. The Metropolitan standardization sampling procedure allowed for three successive refinements to the most adequate sample selection and description possible. Each refinement was designed to be the best possible one that could be obtained at a given time, but subject to revision at the time of the next refinement. Briefly, the three stages involved selection and description in terms of (1) demographic data descriptive of school districts, gathered before invitations were extended for participation in the standardization, (2) responses to a questionnaire distributed to school systems after they agreed to participate but before actual testing, (3) statistical weighting of test scores after all testing was completed but before norms were derived, to effect final improvements in the sample.

6. Criterion of Availability

A vast amount of information about schools, pupils, and communities can be obtained. For selecting and describing the Metropolitan sample, it was considered desirable to use index variables that were reasonably accessible. The concern here was not simply the availability of data to persons working on the project, but also their accessibility to school personnel evaluating the sample and comparing it with their own schools in terms of these same index variables.

7. Criterion of Convention

It was acknowledged that requests would be received for some types of information that have little to do with sampling efficiency or the adequacy of the sample. Some test users have traditionally expected certain types of information to be reported. Therefore, a considerable amount of information was collected simply because it was conventional to have it available. Examples of such data are variables related to the school or teachers (e.g., average class size or average per-pupil expenditures).

III. SOURCES OF INFORMATION

Large quantities of information from a variety of sources were employed in each stage of the process of selecting and describing the sample. These sources are listed in this section so that they can be referred to in subsequent discussions.

1. Previous Research

Previous research, especially on the relationship between index variables and test performance, constitutes the first important source of information used in developing the guidelines for sampling. All previous research relevant to the standardization sampling cannot be detailed here. This section provides references to some of the more important research and outlines the nature of these studies.

The type of study that is important here is one in which correlations are obtained between index variables describing a school, or the population served by the school, and the test performance of pupils in that school. Index variables typically involved in these studies are those available in U.S. census records (population, median family income, percent of student population speaking a language other than English in the home, etc.) or in school files (starting teachers' salaries, pupil-teacher ratio, instructional time per subject, etc.).

Several such studies have been completed to date. The most recent summary of these studies available at the time the Metropolitan sampling was completed was Hogan (1970). This study involved

an analysis of data on the standardization samples for the 1958 edition of Metropolitan and the 1964 edition of Stanford Achievement Test. Studies by Lennon (1952) on the 1940 Stanford, Gawkoski (1956) on the 1953 Stanford, and by Thorndike (1951) on the 1948 Metropolitan, Barnes (1962) on the Essential High School Content Battery, and Flanagan (1962) on Project Talent were other important sources. Some of the more important generalizations developed from these studies relate to the following points: (1) index variables that improve sampling efficiency; (2) optimum weights to assign to index variables in making composite indicators; and (3) potential index variables that contribute little to sampling efficiency. Other information available in these studies also helped in determining specifications for the Metropolitan sample.

2. Current Information on the Population

In order to assess the extent to which the sample represents the population in terms of the index variables chosen, information was needed not only on the characteristics of the sample but also on the characteristics of the population. Several sources of information on the population were used in the Metropolitan sampling project.

The primary source of information was the School District Fifth Count Summary Tape, obtained from the 1970 Census. This source was used because it consists of complete tallies of population characteristics by school district rather than by geopolitical unit.

The second source of information was various reports of the United States Census Bureau. Reports consulted included the County and City Data Book (1972), and the state-by-state volumes in the 1970 U.S. Census of Population: Characteristics of the Population. These sources were used for identifying demographic characteristics, such as income and average schooling, for the population as a whole and for segments of the population.

For most variables used in this sampling project, the most recent information available from the U.S. Census Bureau was collected in 1970. Since these data were used to describe communities in 1977-78, questions may be raised about the accuracy of the data. Since it is known that there is a very high correlation among successive sets of census data (c.f. Hogan, 1970), use of the 1970 data is considered appropriate. All socioeconomic data will be rechecked and updated when 1980 census data are available. A similiar check of the 1970 Metropolitan socioeconomic data using the 1960 and 1970 census data revealed very high correlations between the two data sets.

A third important source of information was provided by research conducted by the National Education Association (NEA). This research is reported periodically in the NEA Research Bulletins. Information on such index variables as per-pupil expenditure, teachers' salaries, etc. for most public schools is collected and reported annually by the NEA. Some of the summaries appear in other sources, such as the Digest of Education Statistics, the 1976-1977 and 1977-1978 editions of which were consulted. Information on school-related variables is also collected and reported by the National Center for Education Statistics and by the U.S. Census Bureau.

A fourth source of information on the population, particularly important as listings of elements in the population, are school directories. Those used in the Metropolitan sampling project were: (1) Education Directory: Public School Systems 1976-77; (2) NCEA/Ganley's Catholic Schools in America, 1977; (3) Sargent's The Handbook of Private Schools, 1977; and (4) various state school directories

3. Sampling Theory

A very critical source of information used throughout the project was the body of knowledge on sampling theory. The importance and use of this body of knowledge for a standardization program is obvious. A widely available source providing the formulas and theory used in the Metropolitan sampling project is Cochran (1963).

4. General Experience

Finally, an important source of information was the general experience of the Metropolitan authors, editors, and research staff in conducting large-scale standardization programs. Many of the practical problems of selecting and describing a sample could be solved only by reference to general experience. For example, one must know what information schools do and do not have on file, what percent of cases tested in the standardization will not be usable due to damaged answer

documents or incomplete identifying information, and how to distribute materials for testing to maximize the percent of usable documents. Obtaining reasonable answers to these and dozens of similiar questions clearly depends on general experience rather than on any other source of information.

IV. DESIGN FOR STANDARDIZATION

This section lists the major decisions made regarding the design of the standardization program for the Metropolitan Achievement Tests.

1. Index Variables

The major index variables used in selecting and describing the standardization groups were the following:

(a) a socioeconomic index composed of median family income and the percent of high school graduates among persons 25 years of age and over

(b) school system enrollment

(c) public vs. nonpublic schools

(d) geographic region

The socioeconomic index was considered the most important index variable since, of all non-test variables, it has the highest relationship with achievement test scores. Median family income and percent of high school graduates were weighted so that the education variable contributed approximately twice the amount of variance as did the income variable. Public school systems were classified in terms of population into five groups: school systems enrolling 2501 or more students per grade, those enrolling 501-2500 per grade, systems serving 201-500 students per grade, systems with an enrollment of 25-200 students per grade, and systems with a total enrollment of fewer than 300 students. Nonpublic systems were not stratified by enrollment.

The standardization samples were matched with the national population in terms of four geographic regions. The four regions and the states included within them are as follows:

(1) Northeast: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont;

(2) Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin;

(3) Southeast: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, Washington D.C., West Virginia;

(4) West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming.

This is the geographic division used by the NEA. It differs from the geographic divisions used by the United States Census Bureau, which includes Maryland, Delaware, Texas, and Oklahoma in the South. The NEA division seemed more appropriate since it yields four regions that are (a) more equally balanced in total population and (b) more nearly homogeneous in socioeconomic status.

The Metropolitan sample was designed to give proportionate representation to public and nonpublic schools. The nonpublic category was further subdivided proportionately into Roman Catholic schools and all other nonpublic schools.

Each pupil in the standardization of the Survey battery took the appropriate level of the 1979 edition of the Otis-Lennon School Ability Test, Form R. The resulting data provide another source of information on the characteristics of the Metropolitan sample. Furthermore, since many schools use both Otis-Lennon and the Metropolitan tests, this joint standardization serves as an important base for comparing performance on the two tests.

2. Time of Testing

It was decided that the Metropolitan Achievement Tests should be standardized at two times in the academic year. This decision was based on three facts. First, schools in the United States are split almost equally in terms of preference for beginning-of-year or end-of-year testing. Second, interpolated norms do not yield the accuracy given by empirically determined norms. Further, empirically determined norms are now required for most federally funded evaluations. For the Metropolitan, the standardizations were conducted so that schools could use the test norms with equal confidence in the fall or spring of the year. Such a standardization procedure has the added benefit of allowing schools to compare academic growth of local pupils with a national norm within a single academic year.

The Metropolitan was standardized between October 3 and 31 in 1977, and between April 3 and May 5 in 1978. These periods are the ones during which the majority of regular school testing is done. Norming midpoint dates were October 15 for the fall, and April 20 for the spring. Surveys of testing practices indicate that so little testing is done at midyear that separate standardization in, say, January, was not necessary. The grade placements at which each battery was normed are as follows (placements ending in .1 are October; .7 indicates April):

Survey Battery

Preprimer:	K.1	Elementary:	3.7, 4.1, 4.7
Primer:	K.7, 1.1	Intermediate:	5.1, 5.7, 6.1, 6.7
Primary 1:	1.7, 2.1	Advanced 1:	7.1, 7.7, 8.1, 8.7, 9.1, 9.7
Primary 2:	2.7, 3.1	Advanced 2:	10.1, 10.7, 11.1, 11.7, 12.1, 12.7

Reading, Mathematics, and Language Instructional Tests

Primer:	K.7, 1.1	Elementary:	3.7, 4.1, 4.7
Primary 1:	1.7, 2.1	Intermediate:	5.1, 5.7, 6.1, 6.7
Primary 2:	2.7, 3.1	Advanced:	7.1, 7.7, 8.1, 8.7, 9.1, 9.7

Reading and Mathematics Instructional Tests

Advanced 1: 10.7, 11.7, 12.7 (combined as a "high school" sample)

Schools participating in the fall and spring standardization programs were selected and described in essentially the same way. Approximately 70% of the schools in the fall program also participated in the spring program, accounting for 83% of the spring sample. This high degree of dependence between the two samples was created to improve comparability of norms and to provide data for the study of growth within the academic year.

Virtually no "practice effect" was expected for pupils tested in both the fall and the spring, for three reasons. First, the time interval between testing was substantial—about six months. Second, test forms were switched for spring testing (see Section IV.3). Third, pupils in Grades K through 3 took different levels of the test in October and April.

3. Forms

Both forms of all batteries of the Metropolitan were standardized at both testing times. Often one form of a test is standardized and other forms are "equated" to it in a smaller research program, or only one form is normed at each standardization point. These procedures were not followed for

the Metropolitan, so that nationally based empirical data – both norms and item and objective data– are available on both forms of the test.

The two forms of the test (J and K) were distributed randomly within grade, by classroom, within building throughout all schools participating in the program. Theoretically, randomization of forms within classes is preferable to randomization by classroom. However, most levels of the series contain dictated material; thus, randomization within classes is not feasible. To maintain consistency of procedure, randomization by class was used for all levels of the series. Assignment of forms to each classroom was done by the publisher.

Students who took Form J in the fall were given Form K in the spring and vice versa. There is only one form (JS) of the Preprimer Survey battery; this level was used only in the fall phase of the standardization, at the beginning of Kindergarten.

4. Grades

A major effort was made to have schools participate in all grades in which they enrolled students. This was considered desirable in order to improve the stability of test norms in successive grades; such stability is important for the comparisons schools make among the scores obtained in various grades. In both the fall and spring standardizations, schools were asked to participate in Grades K through 9 for the Instructional batteries and K through 12 for the Survey battery. Because of the way schools are organized, however, some systems could not test at the kindergarten or high school level; therefore, some exceptions to this general rule were made. The large majority of participating districts tested at all grades in which they enrolled students.

In the spring, a subsample of students in Grades 10-12 took the Advanced 1 level of the Reading and Mathematics Instructional Tests. The purpose of this was to assess the achievement of high school students on these Instructional batteries, as it was anticipated that some school systems would use these tests at the high school level.

5. Use of Otis-Lennon

All pupils in Grades 1 through 12 in the Survey standardization took the appropriate level of the Otis-Lennon School Ability Test. During the fall norming this decision and the reasons for it were discussed under "Index Variables" above. Form R of Otis-Lennon was used in all instances. Kindergarten students did not take Otis-Lennon. The levels of Otis-Lennon used in the standardization were as follows:

Primary I:	Grade 1	Intermediate:	Grades 6 through 8
Primary II:	Grades 2 & 3	Advanced:	Grades 9 through 12
Elementary:	Grades 4 & 5		

6. "Special" Students

The testing of "special" students poses a unique problem in norming programs. For the Metropolitan research programs, the following guidelines were used. Schools were asked to test their "special" students if such students would normally be tested in a regular system-wide testing program. Table 2 indicates by program the percent of systems normally testing various special categories of students. In the standardization, such students were included in the norms only if either the students were "mainstreamed" (i.e., placed for at least some of their instruction in non-special classes) or (in very few cases) if school officials requested that such students take the on-level test battery. In most cases, special classes were assigned an out-of-level battery, and their scores were excluded from the norms. It is impossible to state accurately the number of "special" youngsters included in the norms, although the total number of such students tested who were in special non-mainstream classes was fewer than 200.

7. No Cost

The Metropolitan standardization was carried out without cost to the participating schools. It was felt that this "no cost" feature would effect improvement in the representativeness of the sample. There was no charge to schools for any of the Metropolitan pre-publication research programs.

V. PROCEDURES FOR SELECTING THE SAMPLE AND FOR WEIGHTING SAMPLE DATA

1. Selection of the Sample

As previously mentioned, public school systems were classified into five groups in terms of enrollment. Public school systems (with the exception of those with a total enrollment of fewer than 300 students) were also classified into three groups in terms of socioeconomic status (high, average, low). Nonpublic schools were not stratified by either enrollment or socioeconomic status. This classification scheme resulted in a total of fourteen cells: one cell containing all nonpublic schools; one cell including all public schools with enrollments under 300; twelve cells containing all other public school systems (four size categories by three socioeconomic levels).

From the pool of potential participant systems, four separate and independent subsamples were drawn—a subsample to be invited to participate in each of the standardizations: Survey, Reading Instructional, Mathematics Instructional, and Language Instructional. Each subsample was drawn in such a way as to yield the desired percentage of cases in each of the cells of the stratifying matrix described above.

For each system in these subsamples, two alternate systems were also selected from the pool of potential participants. Each alternate was drawn to match (in terms of stratifying variables) the original system for which it was an alternate. Alternate systems were invited whenever a system in the original list declined to participate.

After system selection was completed, the resulting sample's characteristics were compared with those of the total population in terms of all stratifying variables. Minor adjustments were made in a few instances to improve the match between population and sample values on index variables within a cell.

It should be noted that not all students within the largest school systems were to be tested. Additional sampling procedures were developed to obtain samples of students from these large systems. After each large system agreed to participate in the standardization, school officials were asked to submit to the publisher, in confidence, a list of the most recent average achievement test scores for each building in the system. In addition, they were asked to provide available demographic data for each building enrollment. Samples of approximately 250-500 students per grade (across several buildings) were then selected. Three equivalent subsets of buildings (an original and two alternates) were selected for each such system. Again, if one of the original buildings could not participate, its alternate was asked to participate. After the sample was thus developed, the Test Director or other school official was asked to verify that the sample of buildings was not atypical of the entire system in any important way such as ethnic balance, cultural factors, or achievement.

A list of all participating districts is provided in Appendix A at the end of this Special Report. Districts are listed by state within geographic region. A total of 218 districts—at least one from every state—participated in the norming programs. The list of school systems contains two identifying codes—one numeric and one alphabetic. The numeric code designates the size of the system in terms of average enrollment per grade:

1 = 25-200 students per grade

2 = 201-500 students per grade

3 = 501-2500 students per grade

4 = 2501 or more students per grade

5 = total system enrollment of less than 300

6 = all nonpublic school systems

The alphabetic code indicates the part of the standardization in which the school participated:

S = Survey and Otis-Lennon

R = Reading Instructional

M = Mathematics Instructional

L = Language Instructional

Finally, F after the system name indicates that the system tested only in the fall, F-Sp that the system was in both fall and spring samples, and Sp that the system tested only in the spring.

Each school system participating in the standardizations was asked to complete a questionnaire relating to various system characteristics (other than stratifying variables), policies, and curriculum. Questions covering teachers' experience and salary structure, student grouping, etc. were included. From these data, it was possible to amplify the descriptions of participating systems. Selected results from these questionnaires are summarized in Table 4.

2. Weighting Sample Data

As indicated in the section "Criteria for Selection and Description," provision was made in the initial planning of the standardization for adjustment of the obtained data. Students' scores were weighted statistically to achieve a better approximation to national characteristics in terms of critical index variables. Since all pupils participating in the fall standardization of the Survey battery were administered the Otis-Lennon School Ability Test - Form R, it was possible to weight scores on both forms of the Survey battery at each test level so as to yield distributions in terms of Otis-Lennon raw scores. Unweighted Otis-Lennon raw score means and standard directions are presented by grade and by test form for the fall Survey standardization sample in Table 1.

For the Survey battery and for each Instructional battery, pupils scores were weighted on the basis of critical characteristics of the school systems in which they were enrolled. First, scores were "preweighted" on the basis of the geographic region of the participating school system. Preweights were derived from school system enrollments provided by the School District Fifth Count Summary Tape for public schools, and Sargent's The Handbook of Private Schools and NCEA/Ganley's Catholic Schools in America, 1977, for nonpublic schools. Then, at each grade level, scores were weighted on the basis of size of school system enrollment and socioeconomic status of the participating system. Complete test records of all students in a given cell were thus appropriately weighted, as were descriptive data presented in the tables below.

VI. FINAL CHARACTERISTICS OF THE SAMPLES

This section describes the final characteristics of the actual standardization samples. Data reported in Tables 3 and 4 were collected as described in preceding sections. The attempt is made to provide a variety of information to help test users in assessing the standardization sample. Information is presented on the average or typical level of index variables for the samples. National data are also presented.

TABLE 1

Unweighted Otis-Lennon School Ability Test Raw Score Means and Standard Deviations by Grade and by Form - Fall Survey Standardization Sample

OLSAT Level	Grade	Form JS		Form KS	
		Mean	S. D.	Mean	S. D.
Primary I	1.1	38.0	10.0	37.9	10.4
Primary II	2.1	41.5	13.7	42.1	13.5
Primary II	3.1	50.6	13.5	50.8	13.6
Elementary	4.1	35.8	14.5	36.2	14.7
Elementary	5.1	43.0	14.7	43.3	14.7
Intermediate	6.1	36.8	15.1	37.5	14.9
Intermediate	7.1	41.9	15.9	43.7	15.9
Intermediate	8.1	48.0	16.0	47.9	15.8
Advanced	9.1	34.8	14.3	33.6	13.6
Advanced	10.1	38.2	14.7	39.7	14.7
Advanced	11.1	41.9	15.6	43.3	15.2
Advanced	12.1	45.5	15.7	45.1	15.5

TABLE 2

Percent of "Special" Students Tested in Regular System Programs–Fall and Spring Norming Samples Combined*

Category	All Programs Combined	Instructional			
		Survey	Reading	Mathematics	Language
Speech Impaired	84	81	88	89	82
Learning Disabled	62	57	67	79	53
Emotionally Disturbed	45	37	50	65	40
Hearing Impaired	61	53	75	73	52
Sight Impaired	52	43	72	63	38

*These data indicate only the percent of such students who are normally tested in regular programs. They do not indicate the number or percent of "special" students indicated in the Metropolitan norming samples.

TABLE 3

Selected Demographic Characteristics of the
Norming Samples – Fall & Spring Combined

Variable	Instructional Reading	Math	Language	Survey	National Population
School system enrollment per grade					
Public schools:					
2501 and above	24%	25%	22%	23%	25%
501 – 2500	30%	29%	31%	30%	30%
201 – 500	19%	19%	21%	18%	18%
200 and below	17%	17%	17%	19%	17%
Nonpublic schools	10%	9%	9%	10%	10%
Geographic Region					
Northeast	21%	24%	29%	30%	25%
Midwest	23%	30%	31%	31%	28%
Southeast	24%	27%	15%	20%	22%
West	32%	20%	25%	19%	25%
Ethnic Group					
White	79%	81%	77%	75%	76%
Black	13%	15%	16%	19%	16%
Hispanic	5%	2%	5%	4%	6%
Other	3%	2%	2%	2%	2%

TABLE 4

Description of the Metropolitan Standardization Samples in Terms of Selected Characteristics

Characteristic/Variable	Fall Sample				Spring Sample				Combined-Spring and Fall				Natl. Pop.*
	Instructional				Instructional				Instructional				
	Rdg.	Math.	Lang.	Survey	Rdg.	Math.	Lang.	Survey	Rdg.	Math.	Lang.	Survey	
Median Family Income (1970)	$9790	$9960	$10,530	$9760	$9800	$9140	$9460	$9760	$9800	$9500	$10,020	$9760	$9590 [a]
% of Adults Who Graduated From High School (1970)	53%	53%	56%	53%	51%	54%	53%	54%	52%	54%	54%	54%	52% [b]
School Starting Date (Mdn.)	Aug. 29	Aug. 30	Aug. 29	Aug. 30	Aug. 29	Aug. 29	Aug. 29	Sept. 5	Aug. 29	Aug. 30	Aug. 29	Aug. 30	—
% of Grade 1 Students Who Attended Kindergarten	83%	87%	89%	78%	87%	82%	83%	85%	85%	85%	87%	81%	81% [c]
% of Families Receiving Any Kind Of Public Assistance	15%	19%	19%	20%	16%	21%	28%	18%	16%	20%	22%	19%	13–17% [d]
% of Students Who Reside In Basically Rural Areas	21%	33%	24%	32%	28%	31%	20%	36%	24%	32%	23%	34%	26% [e]
% of Parents Who are High School Graduates	64%	76%	67%	66%	66%	76%	74%	64%	65%	76%	69%	65%	65% [f]
% of Parents Who Are College Graduates	20%	32%	29%	23%	21%	32%	32%	19%	21%	32%	30%	21%	17% [f]
Average Daily Expenditure Per Pupil In Average Daily Attendance	$1304	$1245	$1194	$1222	$1184	$1353	$1211	$1199	$1253	$1288	$1200	$1212	$1578 [g]
Average Class Size	25	26	26	25	25	26	26	25	25	26	26	25	20 [h]

*See notes on the following page for the sources of these data.

Sources of "National" Data in Table 4

a. General Social and Economic Characteristics – U.S. Summary, p. 469
   Both sample and national data are based on 1970 Census Bureau figures.

b. General Social and Economic Characteristics – U.S. Summary, p. 468
   Both sample and national data are based on 1970 Census Bureau figures.

c. Digest of Education Statistics, 1977–78, p. 48

d. The Status of Children, U.S. Department of Health, Education & Welfare, 1977
   National data are based on the above document refined by the Assistance Payments Administration; the data include both families receiving AFDC and those receiving only food stamps.

e. General Social and Economic Characteristics – U.S. Summary, p. 361
   National data are based on 1970 Census Bureau figures.

f. Current Population Reports, Series P-20, # 313, Sept. 1977

g. Digest of Education Statistics, 1977–78, p. 73
   Sample data include all participating school districts; national data include only public schools, for which expenditures are generally higher than for nonpublic systems.

h. Digest of Education Statistics, 1977–78, p. 2
   Sample data include all participating school districts; national data include only public schools.

Appendix A: Metropolitan Standardization Sample

NORTHEAST

Connecticut

3 Bridgeport R	F
3 Orange R	F

Delaware

1 Appoquinimink (Odessa) S	F-Sp

Maine

1 Mexico (Dist. #43) S	F

Maryland

4 Anne Arundel Co. S	F
4 Montgomery County L	F-Sp

Massachusetts

6 Worcester S	Sp
1 Avon R	F-Sp
2 Dudley R	F-Sp
2 Shrewsbury M	F-Sp
4 Boston M	Sp
2 Hanson L	F

New Hampshire

6 Tilton School (Belknap Co.) S	F
6 Horizon's Edge (Canterbury) R & L	F
1 Lisbon L	F-Sp
3 Manchester L	F-Sp

New Jersey

5 Alpine (Bergen Co.) S	F-Sp
1 N. Arlington S	F
1 Chatham Twp. S	F-Sp
2 Metuchen S	F
3 East Orange S	F-Sp
3 Willingboro S	F-Sp
1 Spring Lake Hgts. R	F
4 Newark R	F
1 Hamilton Twp. (Mays Landing) R & M	F-Sp
1 Glen Rock L	F
6 Camden Diocese - Cherry Hill Schools L	F-Sp

New York

6 Buffalo Diocese - Williamsville Schools S	F-Sp
4 New York City S & M	F-Sp(S) Sp(M)
1 Poland R	F-Sp
6 Rochester Diocese - Rochester Schools M	F-Sp
4 Rochester M	F

Pennsylvania

1 Benton S	F
2 Conneaut (Linesville) S	F-Sp
2 Blairsville R	F-Sp
6 Allentown Diocese - Allentown Schools R	F
6 Archdiocese Phila. R	Sp
3 Shaler Area R	Sp
3 Norristown R	Sp
2 Punxsutawny M	F
6 Altoona/Johnstown Diocese - Altoona Schools M	F-Sp
1 Union City L	F-Sp
2 Quaker Valley (Edgeworth) L	F-Sp

Rhode Island

6 Providence Diocese (Burrillville School) S	Sp
2 Burrillville S	F-Sp

Vermont

5 Cabot (Washington Co.) S	F-Sp
1 Derby S	F-Sp
1 Bristol M	F
1 Springfield M	F-Sp

MIDWEST

Illinois

3 La Grange S	Sp
1 Anna-Jonesboro S	F
1 New Berlin S	F
2 Bourbonnais S	F-Sp

MIDWEST (Cont'd)

Illinois (Cont'd)

2 Streator S	F-Sp
3 Wheaton S	F
6 Chicago Archdiocese - Chicago Hts. Schools S	F
4 Chicago S	F-Sp
6 Joliet Diocese - Kankakee Schools R	F-Sp
3 Granite City R	F
5 Tonica (La Salle Co.) M	F-Sp
1 Mt. Auburn M	F-Sp
2 O'Fallon M	F-Sp
3 Lombard M	F
3 Wilmette M	F-Sp
6 Springfield Diocese - Alton Schools L	F-Sp

Indiana

4 Evansville-Vanderburgh S	F-Sp
6 Ft. Wayne - S. Bend Diocese - Ft. Wayne Schools M	F-Sp
3 Bloomington (Monroe Co.) L	F-Sp

Iowa

1 Sergeant Bluff S	F-Sp
1 Delmar (Dellwood Co.) S	F-Sp
1 Guthrie Center S	F
5 Ledyard (Kossuth Co.) L	F-Sp
1 Prairie City L	F-Sp
3 Davenport L	F-Sp

Kansas

1 Hoyt-Mayetta (Royal Valley) S	F-Sp
1 Stockton R	F-Sp
1 Liberal R	F-Sp
6 Dodge City Diocese (Liberal School) R	F-Sp
1 Minneapolis M	F-Sp

Michigan

1 Coopersville S	F
3 Wayne-Westland S	F-Sp
1 Algonac R	Sp
5 Northport (Leelanau Co.) M	F
1 Columbia (Brooklyn) M	F
1 Yale L	F-Sp
2 Muskegon Heights L	F-Sp

Minnesota

1 Waubun - Ogema - White Earth S	F-Sp
1 Winnebago R	F

Missouri

4 St. Louis S-R-1	Sp
5 Sunrise R-9 (Jefferson Co.) R	F
2 Lebanon M	F
5 Oak Hill-Salem (Dent Co.) L	F

Nebraska

5 Elmwood S	F
1 Bayard S	F
1 Mullen S	F-Sp
6 Trinity Lutheran School (Fremont) R	F-Sp
5 Hayes Center R	F
6 Omaha Archdiocese - Omaha Schools R	F-Sp
6 Christ Lutheran School (Norfolk) M	F-Sp
5 Alliance (Box Butte Co.) L	F-Sp

North Dakota

5 Anamoose (McHenry Co.) L	F
1 Beulah R	F-Sp

Ohio

2 Sycamore S	Sp
1 N. College Hills S	F
1 Pickerington S	F-Sp
1 Symmes Valley (Willow Wood) S	F-Sp
2 Mt. Vernon S	F-Sp
2 Campbell S	F-Sp
1 McComb M	F
4 Akron M	Sp
1 Toronto L	F-Sp
6 Toledo Diocese - Lima Schools L	F-Sp

South Dakota

5 Canistota (McCook Co.) R	F-Sp
5 Summit (Roberts Co.) M	F-Sp

MIDWEST (Cont'd)

Wisconsin

1 Mellen S	F-Sp
6 Milwaukee Archdiocese -Racine Schools etc. S	F-Sp
1 Boyceville R	F-Sp
1 Stratford R	F-Sp
1 Salem (Jt. District 002) M	F-Sp
2 Howard-Suamico M	F
4 Milwaukee M	F
3 Beloit L	F-Sp

SOUTHEAST

Alabama

2 Dale Co. M	F-Sp
3 Jasper (Walker Co.) L	F-Sp

Arkansas

2 Bryant R	F-Sp
1 Paragould L	F-Sp

Florida

2 Charlotte County S	F-Sp
4 Pinellas County S	F
3 Alachua Co. M	F-Sp
6 St. Augustine Diocese - Jacksonville School M	F-Sp
6 St. Petersburg Diocese - Clearwater Schools L	F-Sp

Georgia

3 Cherokee County S	F-Sp
4 DeKalb County S	F
4 Clayton County R	F-Sp
1 Oglethorpe Co. M	F-Sp

Kentucky

1 Monticello S	F-Sp
2 Nelson County S	F-Sp

Louisiana

6 New Orleans Archdiocese - New Orleans Schools S	F-Sp
6 Baton Rouge Diocese - Plaquemine Schools, etc. R	F
6 Alexandria/Shreveport Diocese - Shreveport Schools M	F-Sp
6 Lafayette Diocese - Abbeville Schools L	F-Sp
3 Ville Platte (Evangeline Parish) L	F

Mississippi

1 New Albany S	F-Sp
6 St. Andrews School (Jackson) L	F-Sp

North Carolina

1 Maxton S	F-Sp
2 Goldsboro R	F
4 Charlotte-Mecklenburg County R	F-Sp

South Carolina

1 Florence #2 R	F-Sp
2 York #02 (Clover) L	F-Sp

Tennessee

6 Memphis Diocese S	Sp
2 Hardin County S	F-Sp
2 Humboldt R	F-Sp
4 Nashville M	F-Sp

Virginia

3 Hampton City S	F
4 Virginia Beach S	F
6 Richmond Diocese - Lynchburg Schools R	F-Sp

West Virginia

2 Lewis County S	F-Sp

WEST

Alaska

5 Iditerod (McGrath) S	Sp
5 Hoonah (Skagway-Yakutat Co.) L	F-Sp

Arizona

1 Whiteriver S	Sp
6 Tucson Diocese S	Sp
3 Yuma R	F

WEST (Continued)

California

2 Sierra Sands S	Sp
2 Alta Loma S	Sp
1 Geyserville S	F-Sp
2 Loomis Union Elementary S	F-Sp
3 Delano S	F
6 Los Angeles Archdiocese - Los Angeles Schools S	F-Sp
6 Carden Marin S	Sp
6 Loma Linda & Redlands S	Sp
5 Blochman Union (Santa Barbara Co.) M	F-Sp
1 Buttonwillow L	F-Sp
4 San Jose L	F
3 Riverside L	F
1 Etiwanda L	Sp
3 Vista L	Sp

Colorado

2 Englewood S	Sp
6 Vail Mountain School (Eagle Co.) S	F-Sp
4 Jefferson Co. M	F
3 Cherry Creek L	F

Hawaii

6 Honolulu Diocese - Honolulu County Schools R	F-Sp
4 Pahoa & Maunaloa R	Sp

Idaho

1 Kendrick S	F-Sp
1 Bonners Ferry (Boundary Co.) R	F
1 Kimberly M	F-Sp
3 Idaho Falls M	F-Sp

Montana

2 Livingston S	Sp
5 West Yellowstone (Gallatin Co.) S	F-Sp
5 Augusta (Lewis & Clark Co.) S	F-Sp
2 Anaconda M	F-Sp
1 Townsend L	F-Sp

Nevada

6 Reno/Las Vegas Diocese S	Sp
4 Clark County R	F

New Mexico

5 Floyd (Roosevelt Co.) S	F-Sp
3 Las Cruces R	F

Oklahoma

1 Blanchard S	F-Sp
5 Lamont (Grant Co.) R	F-Sp
5 Graham (Carter Co.) L	F-Sp

Oregon

3 Lake Oswego S	Sp
1 Gervais M	F

Texas

5 High Island (Galveston) S & M	F-Sp
1 Hubbard S	F-Sp
1 Three Rivers S	F-Sp
3 Brownsville S	F
1 Palacios R	F-Sp
2 Everman R	F-Sp
2 Chapel Hill R	F-Sp
4 Fort Worth R	F
1 Grandview M	F-Sp
6 Beaumont Diocese - Beaumont Schools M	F-Sp

Utah

1 Park City R	F-Sp

Washington

3 Walla Walla S	F-Sp
6 Yakima Diocese - Yakima Schools M	F
6 Seattle Archdiocese - Bellevue Schools L	F-Sp

Wyoming

1 Niobrara #1 (Lusk) S	F-Sp
3 Laramie #01 (Albany County) R	F-Sp
5 Arapahoe R-M-L	Sp
1 Big Horn (Platte 01) M	F-Sp

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